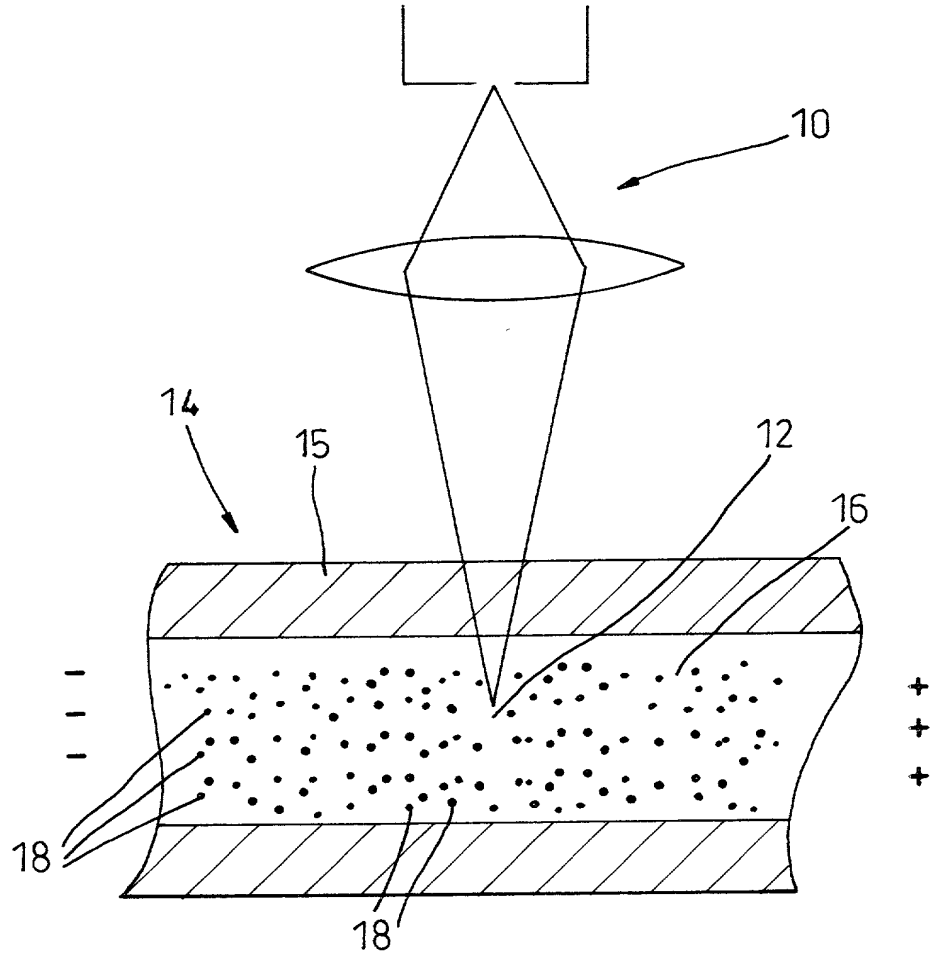


Fig. 1
(PRIOR ART)

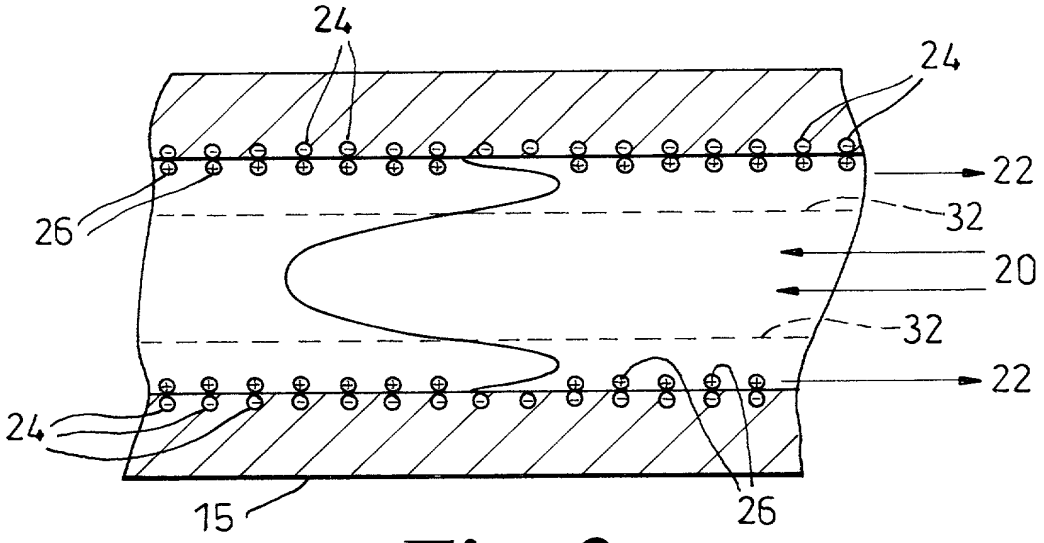


Fig. 2
(PRIOR ART)

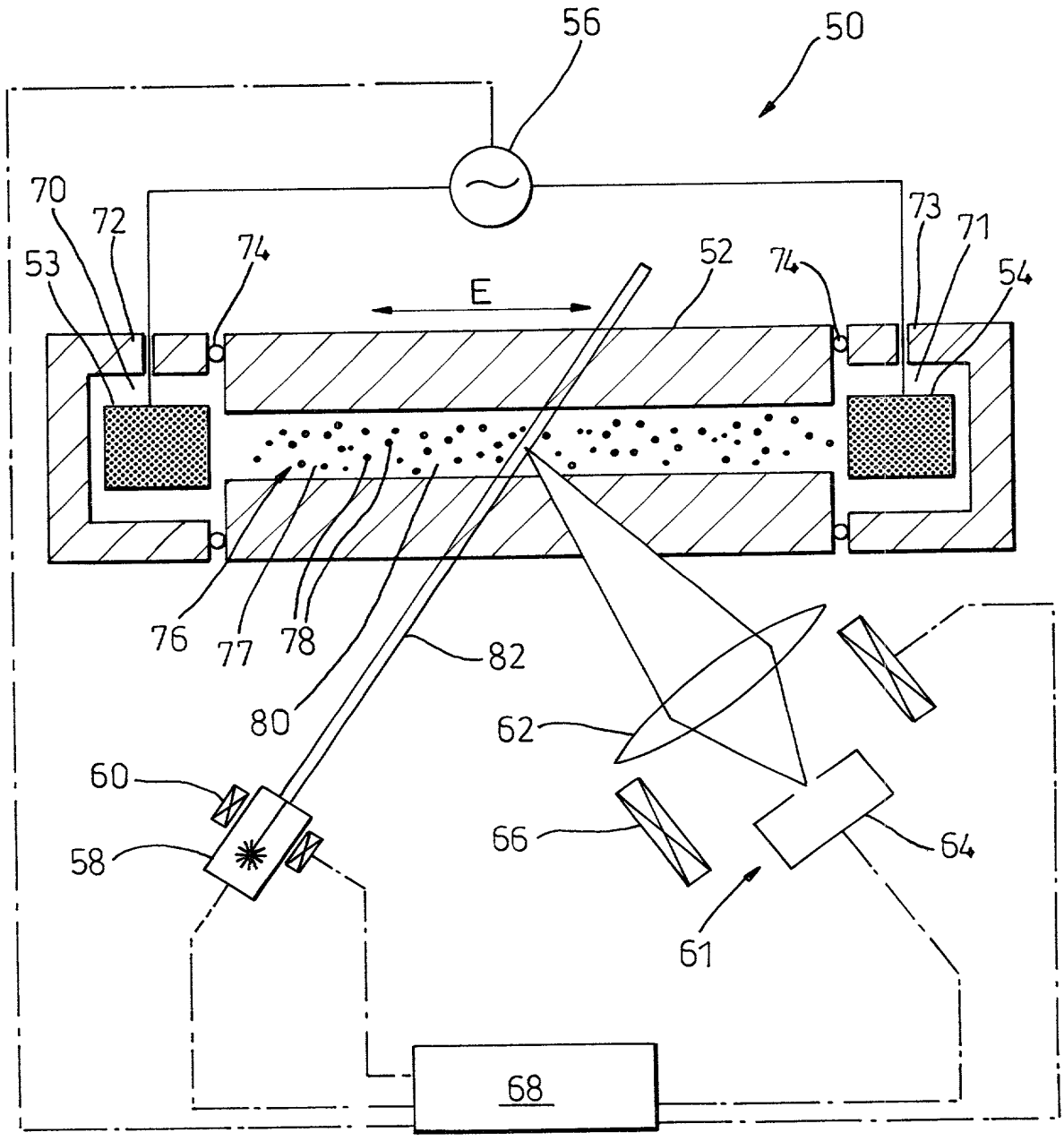


Fig. 3

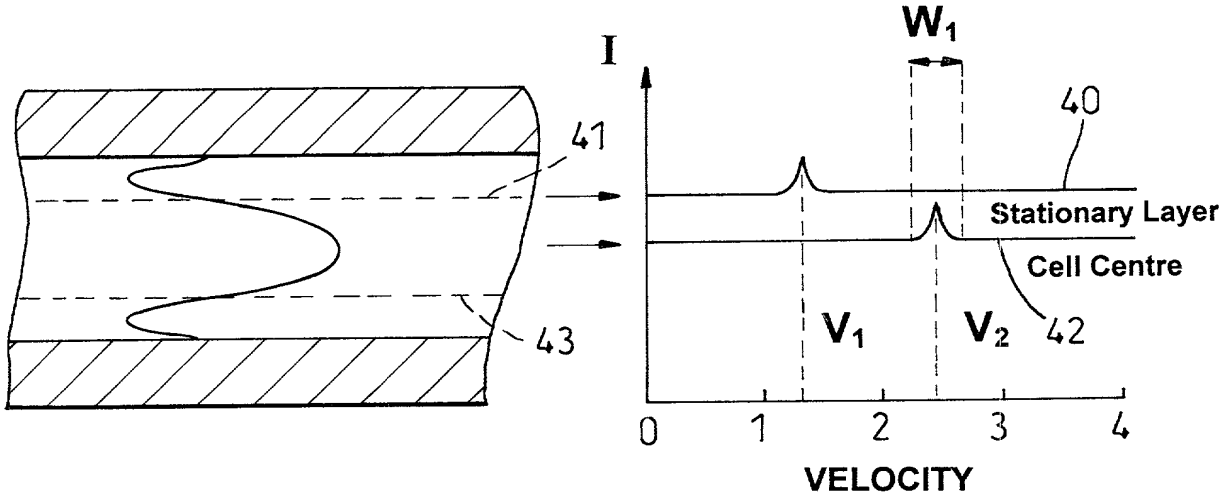

I
W1
40
41
Stationary Layer
Cell Centre
43
V1
V2
42
0
1
2
3
4
VELOCITY

Fig. 4

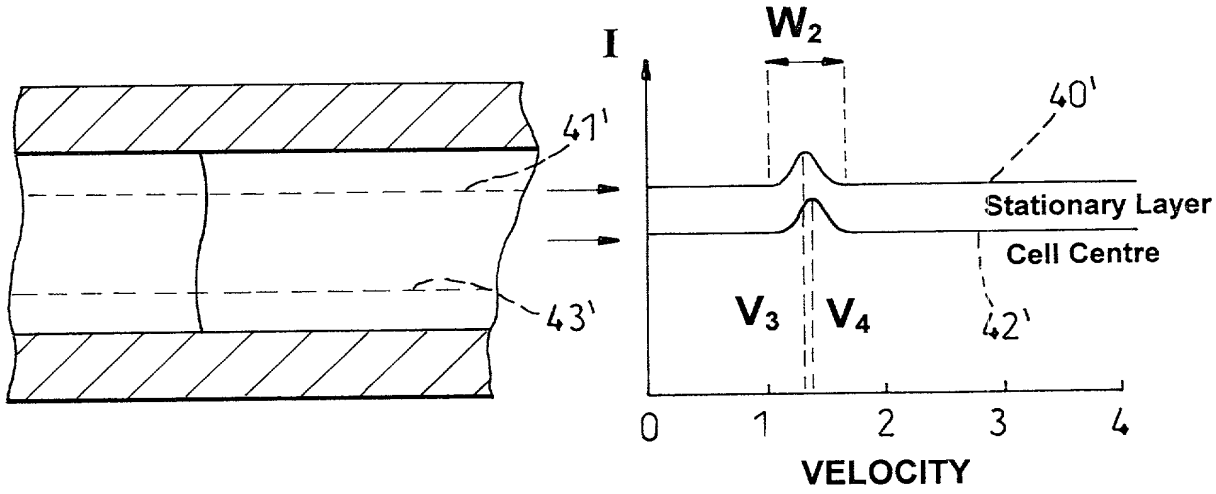

I
W2
40'
41'
Stationary Layer
Cell Centre
43'
V3
V4
42'
0
1
2
3
4
VELOCITY

Fig. 5

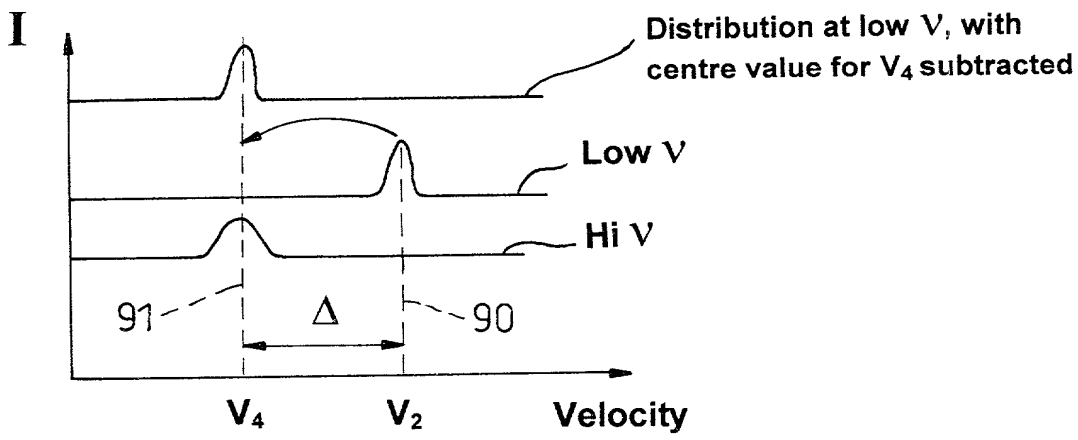


Fig. 6

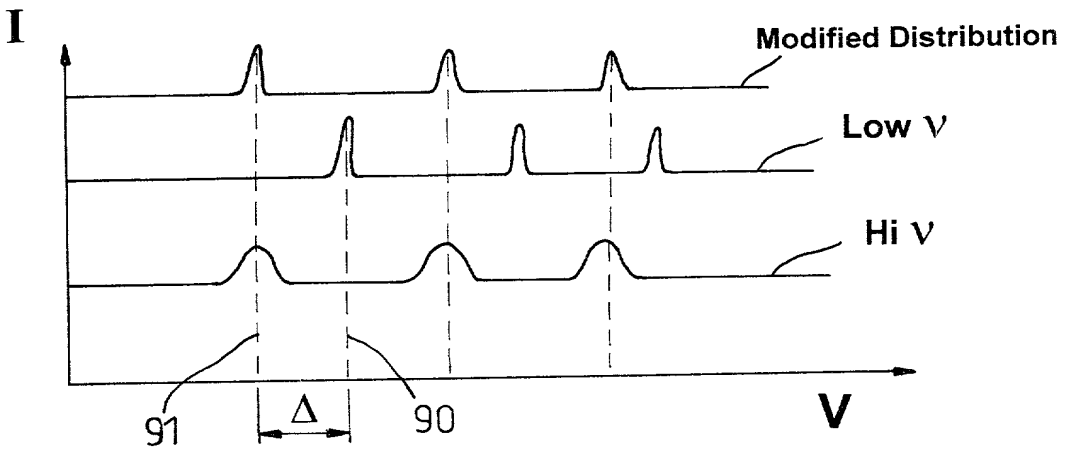


Fig. 7

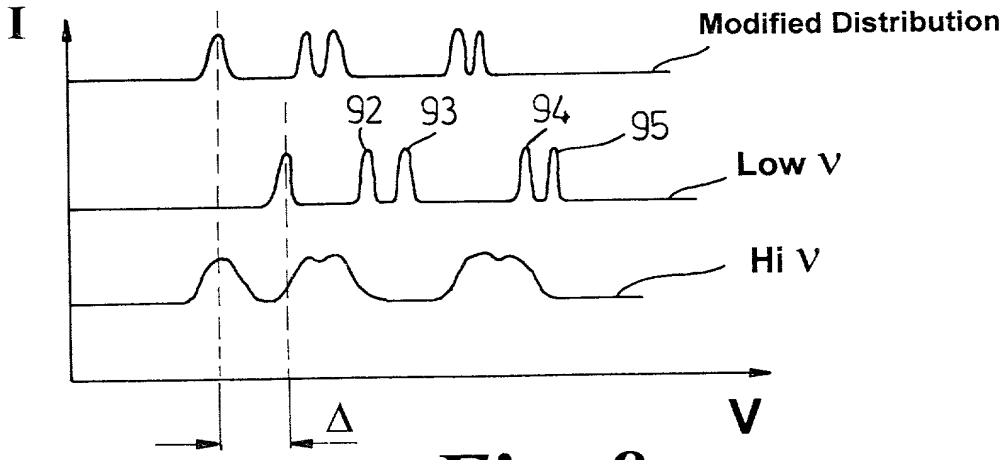


Fig. 8

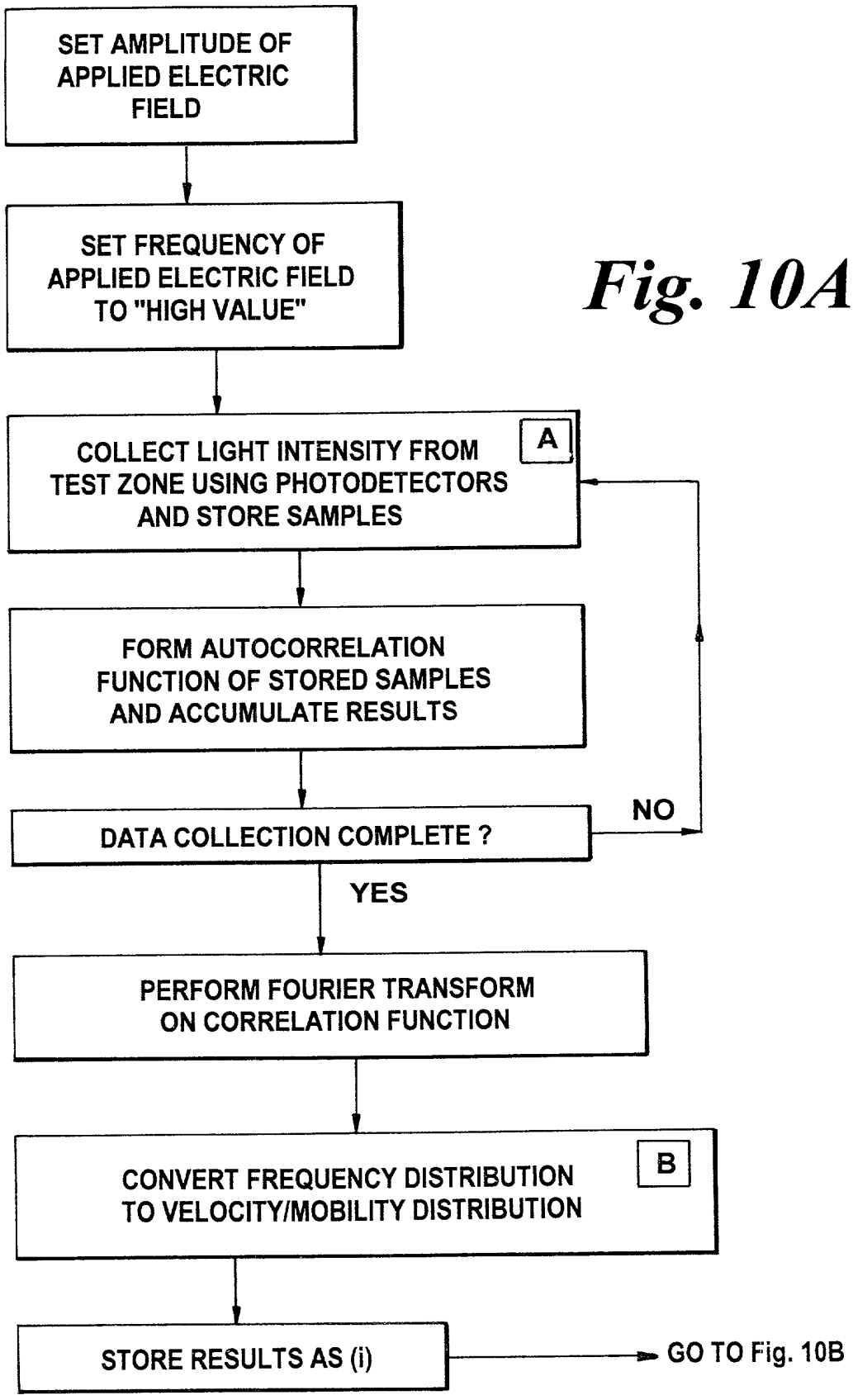

SET AMPLITUDE OF APPLIED ELECTRIC FIELD
SET FREQUENCY OF APPLIED ELECTRIC FIELD TO "HIGH VALUE"
COLLECT LIGHT INTENSITY FROM TEST ZONE USING PHOTODETECTORS AND STORE SAMPLES
A
FORM AUTOCORRELATION FUNCTION OF STORED SAMPLES AND ACCUMULATE RESULTS
DATA COLLECTION COMPLETE ?
NO
YES
PERFORM FOURIER TRANSFORM ON CORRELATION FUNCTION
CONVERT FREQUENCY DISTRIBUTION TO VELOCITY/MOBILITY DISTRIBUTION
B
STORE RESULTS AS (i)
GO TO Fig. 10B

Fig. 10A

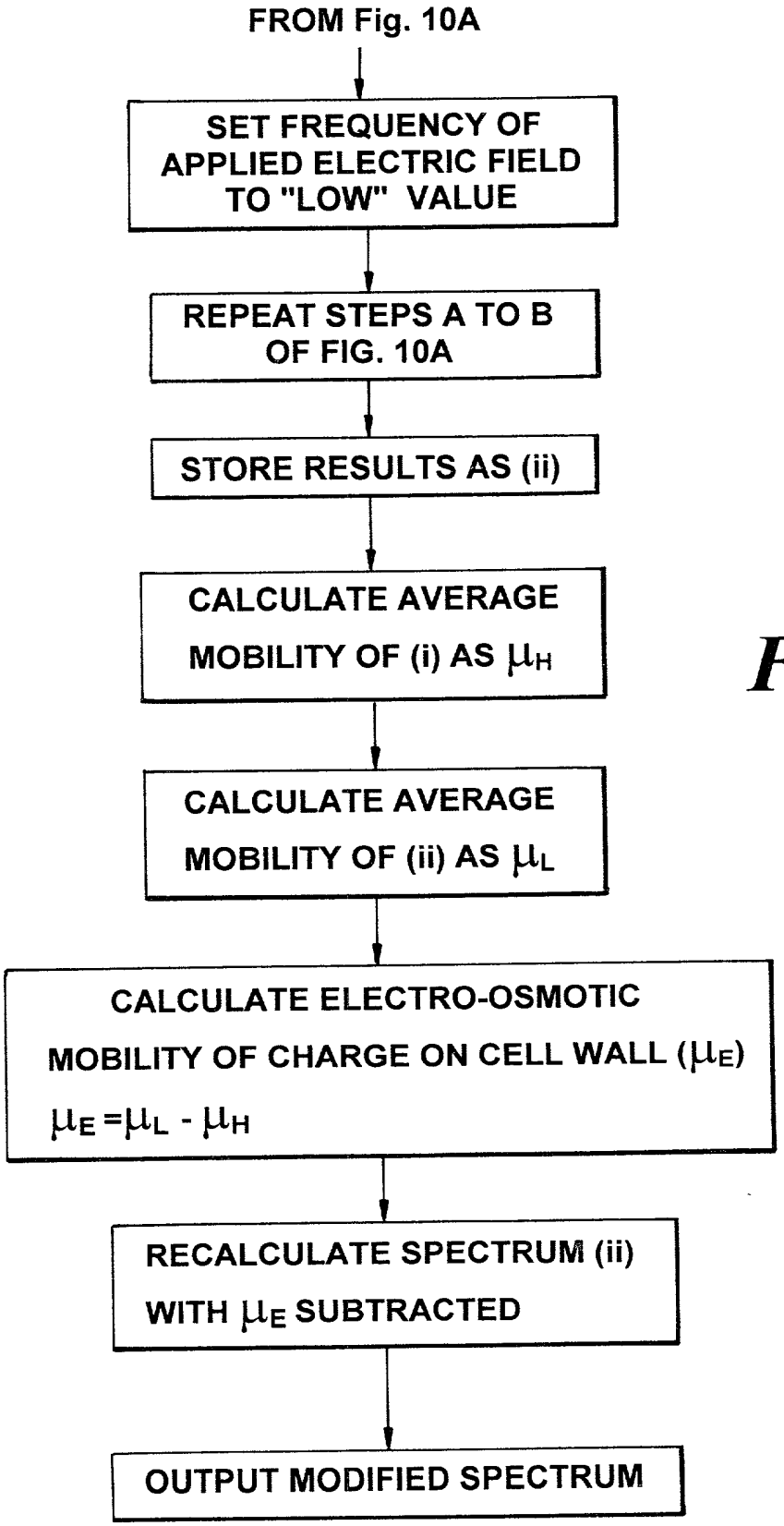

FROM Fig. 10A
SET FREQUENCY OF APPLIED ELECTRIC FIELD TO "LOW" VALUE
REPEAT STEPS A TO B OF FIG. 10A
STORE RESULTS AS (ii)
CALCULATE AVERAGE MOBILITY OF (i) AS μ_H
CALCULATE AVERAGE MOBILITY OF (ii) AS μ_L
CALCULATE ELECTRO-OSMOTIC MOBILITY OF CHARGE ON CELL WALL (μ_E)
$\mu_E = \mu_L - \mu_H$
RECALCULATE SPECTRUM (ii) WITH μ_E SUBTRACTED
OUTPUT MODIFIED SPECTRUM

Fig. 10B

$$\text{MOBILITY } \mu = \frac{\text{VELOCITY OF PARTICLE (V)}}{\text{ELECTRIC FIELD (E)}}$$

Fig. 11A

$$\bar{\mu} = \frac{\int_{-\infty}^{+\infty} \mu f(\mu) d\mu}{\int_{-\infty}^{+\infty} f(\mu) d\mu}$$

WHERE $f(\mu)$ = MOBILITY SPECTRA

Fig. 11B

$$\text{ELECTRO-OSMOTIC MOBILITY } \mu_E = \bar{\mu}_L - \bar{\mu}_H$$

WHERE μ_L = PARTICLE MOBILITY AT LOW FREQUENCY APPLIED ELECTRIC FIELD.

AND μ_H = PARTICLE MOBILITY AT HIGH FREQUENCY APPLIED ELECTRIC FIELD.

Fig. 11C

$$f'(\mu) = f_H(\mu + \mu_E)$$

WHERE $f'(\mu)$ IS THE CORRECTED FORM OF THE PARTICLE MOBILITY DISTRIBUTION FUNCTION.

Fig. 11D

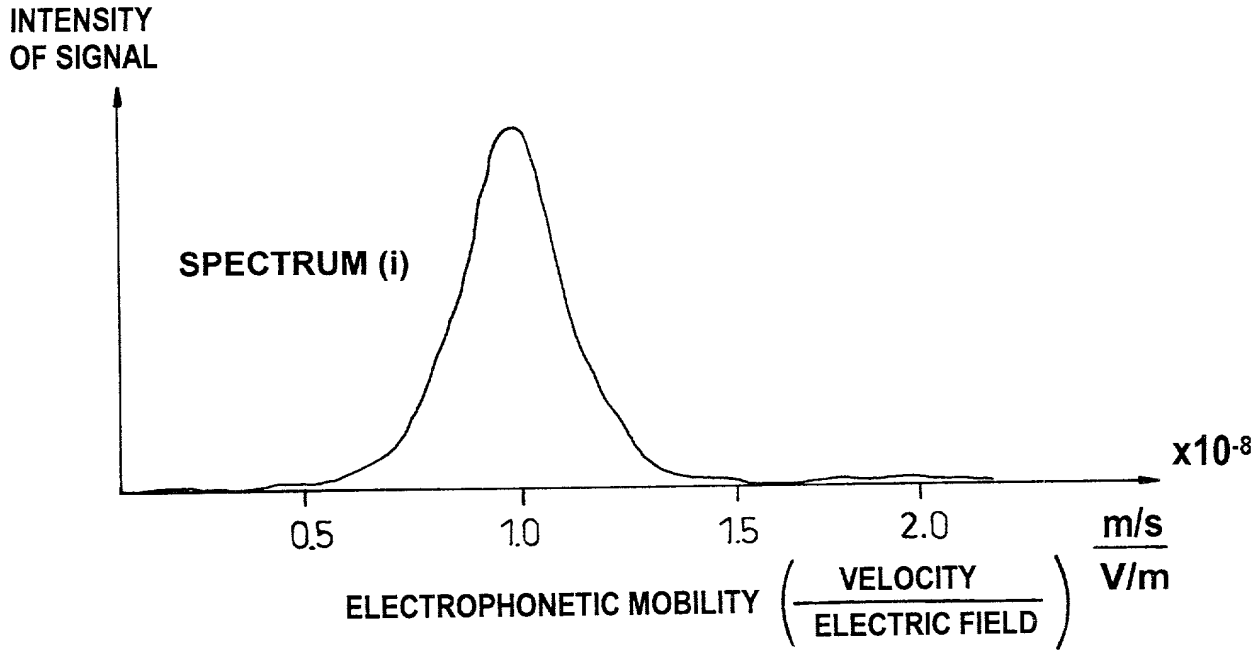


Fig. 12A

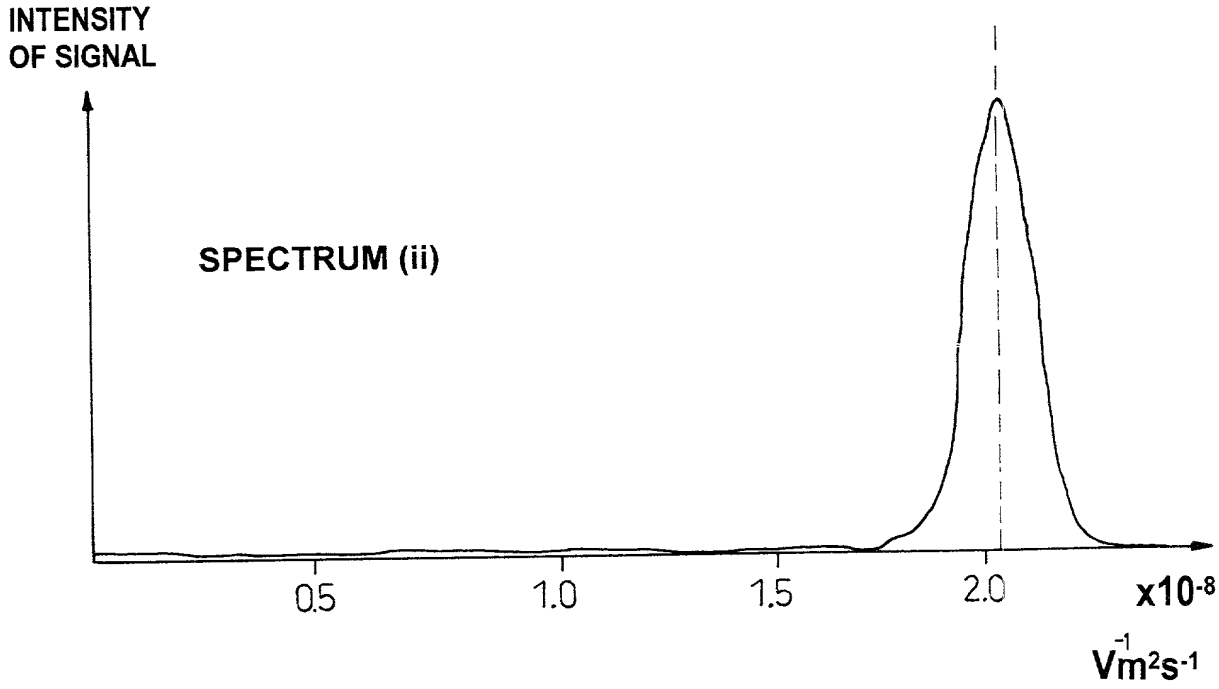


Fig. 12B

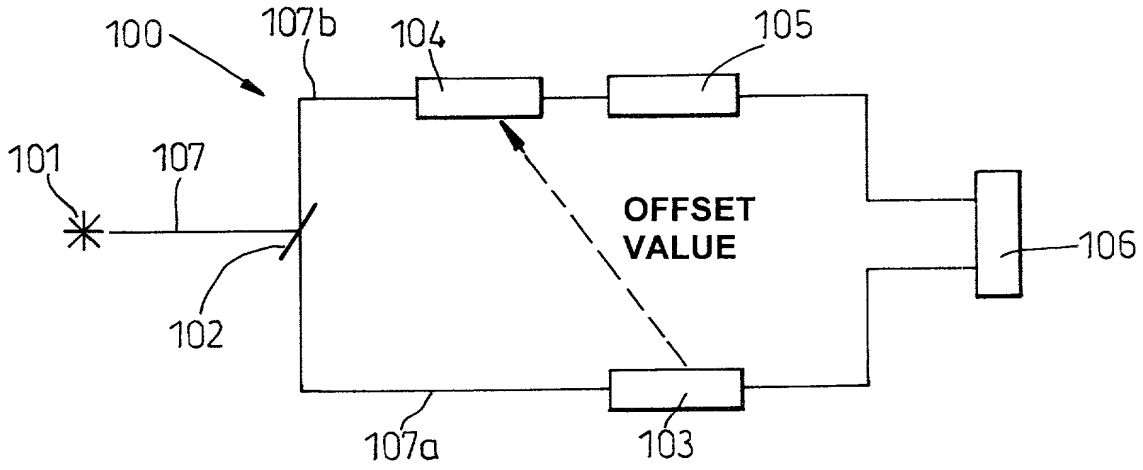

100
107b
104
105
101
107
OFFSET
VALUE
106
102
107a
103

Fig. 9

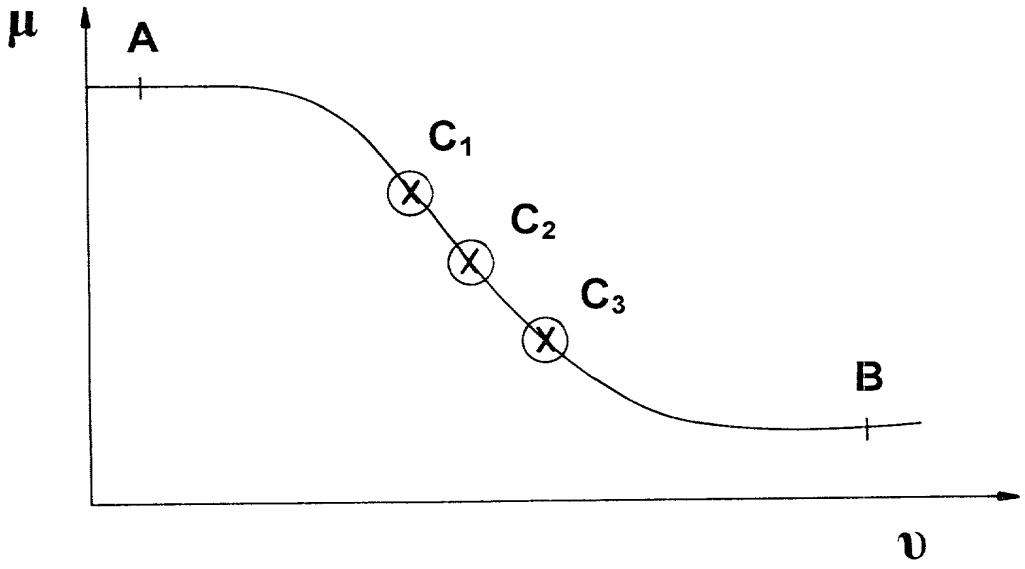
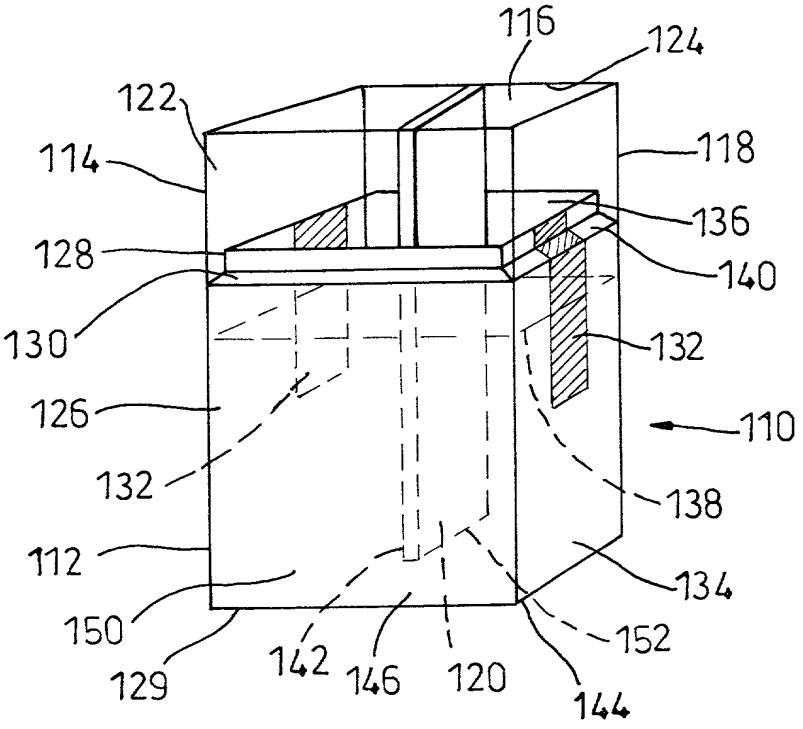

μ
A
C1
C2
C3
B
υ

Fig. 13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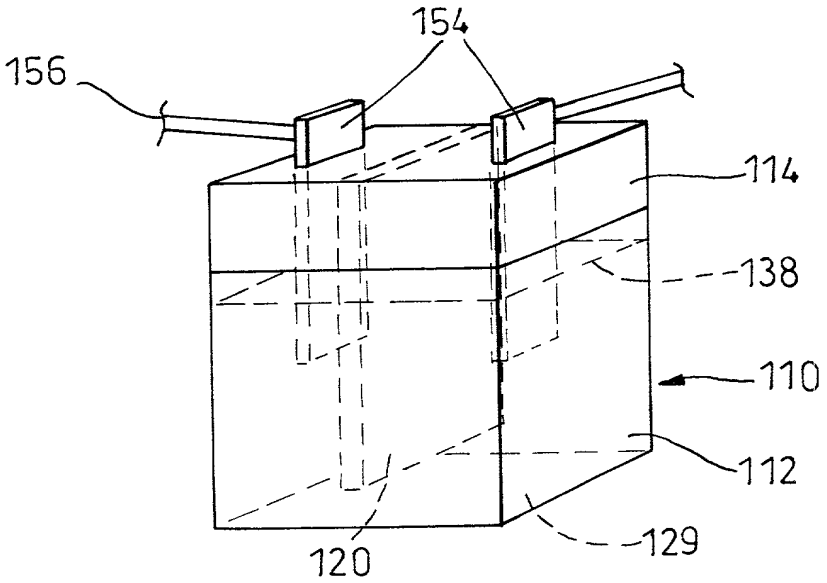
120
144

Fig. 14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156
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110
112
120
129

Fig. 15

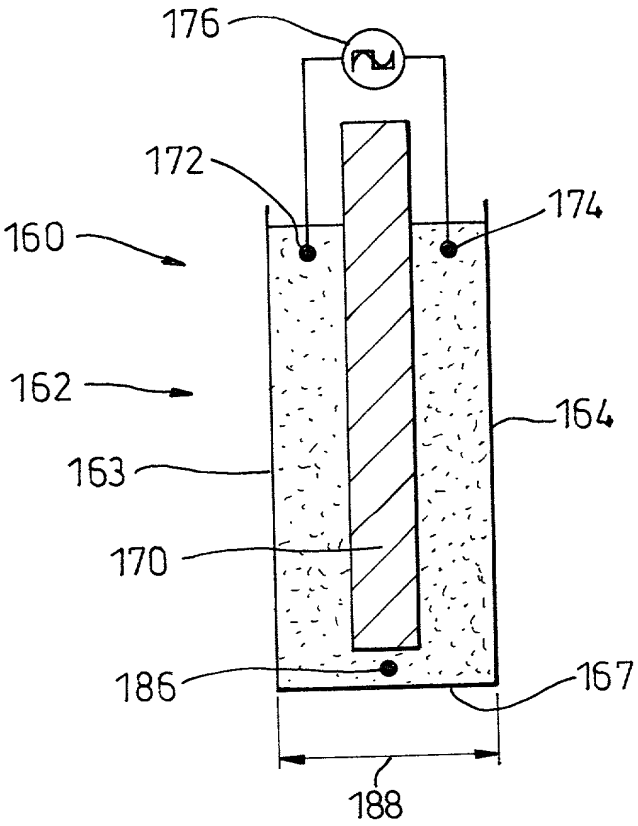

Fig. 16A

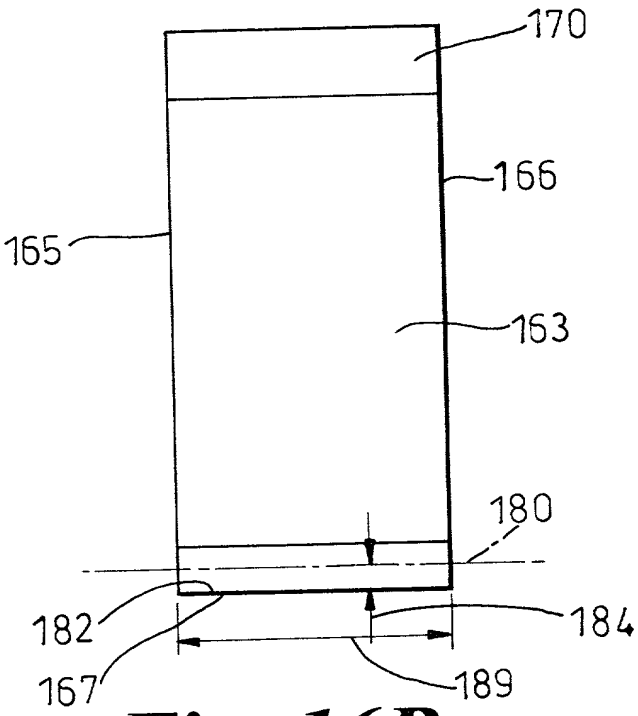

Fig. 16B